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It's Time to Ignore Core Inflation

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"Headline" inflation, as measured by the consumer price index (CPI), has been creeping up lately. Yet Canadians remain complacent about this rise since the behavior of the "core" inflation rate — which ignores food and energy prices, as well as indirect taxes — continues to be subdued. The main reason for recent differences between the two inflation measures is rising energy prices, but it would be a mistake to focus on the effects of energy prices in assessing the amount of inflationary pressure building up in the Canadian economy. In addition to headline inflation, other indicators, such as rapid money growth, unsustainably high real economic expansion, a tightening labor market, and perhaps the low level of the Canadian dollar exchange rate all suggest that monetary policy has been a bit too easy over the past 18 months or so. Those indicators also suggest that the increase in the overnight rate last May was not enough to correct these inflationary pressures and that a further modest tightening of monetary policy would be in order.

No one seems to be worrying much about the price level in Canada these days, but they ought to. Canada's "headline" inflation rate, as measured by the consumer price index (CPI), has been creeping up lately (see Figure 1). It is not yet rising quickly enough to do damage, but quite enough to suggest that trouble is in store if some mild corrective measures are not taken now.[1] Yet complacency is the dominant characteristic of recent commentary on inflation.

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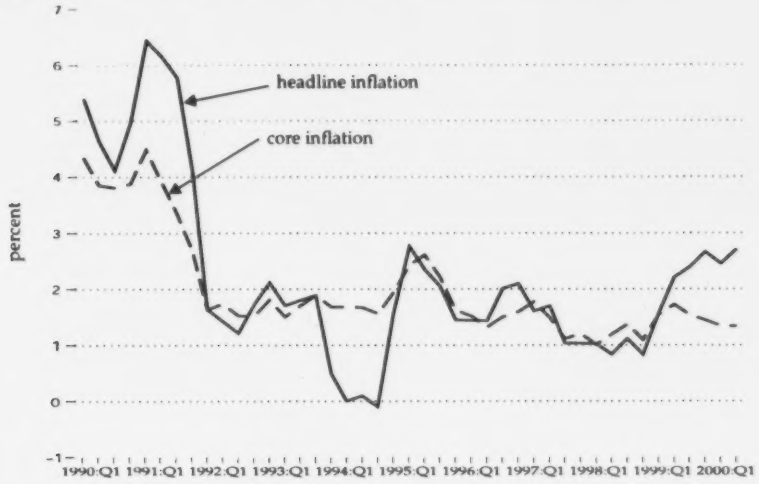
1 Our discussion focuses on the CPI for the very good reason that this is the price index for which the minister of finance and the central bank have set their inflation targets. There is, however, nothing unique in the story it tells. For example, the somewhat broader GDP (gross domestic product) deflator — a measure of the price level of all the goods and services produced in Canada — rose by 1.6 percent in 1999, but was climbing (year on year) at an annual rate of more than 3 percent in the first half of 2000.

Figure 1: ***Headline Inflation and Core Inflation, Canada, 1990–2000***



Source: Statistics Canada, CANSIM database.

"Core" Inflation and the Case for Complacency

The case for complacency has two parts. First, it is argued that although headline inflation has indeed been creeping up, there is no need to worry because "core" inflation — which ignores food and energy prices, as well as indirect taxes — appears to be well under control. Second, it is pointed out that the discrepancy between the two measures of inflation reflects recent increases in the price of oil brought about by the activities of the Organization of Petroleum Exporting Countries (OPEC). Only when this extraneous "cost push" factor begins to impinge on other prices will the Bank of Canada have to step in to fight off its effects. Indeed, with a bit of luck, OPEC's efforts to keep oil prices high will fail, and the Bank need not act at all.

Core inflation does have some valid (albeit limited) uses, which is why the Bank of Canada pays careful attention to it in designing monetary policy. Used indiscriminately, however, core inflation can be dangerously misleading. The concept is a legacy of the eclectic approach that dominated theorizing about inflation in the 1960s and 1970s.[2] According to this approach, inflation is the outcome of a variety of factors, some of which are at work more or less continuously and create a long-run trend in inflation, while others have only intermittent effects that drive shorter-term fluctuations.

All too often, proponents of the core inflation measure seem to suggest that, when it comes to understanding the behavior of the general price level, some prices are more crucial than others. They routinely pick out the

2 For a systematic account of the concept by one of its most influential exponents, see Eckstein (1981); for a brief but penetrating critique of Eckstein, see Parkin (1984).

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individual prices that have risen most in the past month or quarter as being "mainly responsible" for inflation over the period. When these items turn out to be food and energy prices, they find it difficult to resist the temptation to attribute movements in those prices to special factors at work in specific markets, rather than reflecting any more broadly based inflationary impulses.

Pitfalls of Complacency

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The case for deploying the core inflation concept in this way is only superficially plausible. In fact, it makes no more sense to blame inflation over a particular period on the prices that rose the most than on the prices that rose the least. Had either (or indeed any other) group of prices increased more slowly over any period, and given only that the amounts by which all other prices changed had remained the same, the overall index would have risen by less.

This is, however, a matter of arithmetic, not economics. It is absurd to attribute responsibility for inflation in any sense beyond the purely arithmetic to particular components of the CPI. A rise in the price level is *never* the result of a series of *independent* rises in the money prices of specific goods. It is an aggregate phenomenon in its own right, which interacts with factors that cause changes in the *relative prices* of individual goods in order to generate outcomes for their *money prices*. To state a pair of old but important platitudes, the value of money, like the value of anything else, is determined by supply and demand; and inflation, which is just another name for a falling value of money, happens when the supply of money grows more rapidly than the demand for it.

Inflation over any significant period is not caused by the activities of cartels that push up the prices of particular goods nor by shocks — crop failures, for example — that impinge on the prices of other goods. Such special factors affect *relative prices*, not the *absolute price level*. Only to the extent that they provoke some accommodating response on the part of the monetary authorities can they be said to be "causes" of inflation. In the current circumstances, this means that rising oil prices are not causing, and will not cause, inflation in any country unless, by way of some political or bureaucratic process, they provoke an easing of monetary policy or a delay in implementing a monetary tightening that is already needed to correct earlier overexpansiveness.

A Valid Use for the Core Inflation Concept

There is, nevertheless, at least one valid use for the distinction between headline and core inflation. Volatility in particular prices can create volatility in headline inflation when the latter is measured over short intervals. Moreover, although indirect taxes change infrequently, when they do it is usually by a significant discrete amount. They can, therefore, create sharp but necessarily temporary jumps in headline inflation. When disturbances of either kind occur, it is sensible for policymakers concerned with the medium

term — a two- or three-year horizon, for example — to look through their effects at the underlying trend in inflation.[3]

The core inflation measure provides a rough and ready way of doing this, and Figure 1 shows that it has served this purpose well enough on certain occasions in the past. For example, the introduction of the GST in 1991 and the reduction in tobacco taxes in1994 both caused step changes (up and down respectively) in the *level* of the CPI, and hence created jumps in its year-over-year rate of change that were mechanically reversed a year thereafter.

An Invalid Application of the Core Inflation Concept

To the extent that core inflation abstracts from individual price movements that seem to be following a persistent trend over time, however, it is misleading to pay attention to it. Rather, at such times, it is important to keep an eye on the overall inflation rate. Energy prices have now been trending upward for close to a year — hardly a temporary fluctuation — and so has headline inflation. It is a mistake to take comfort from the behavior of core inflation over a period as long as this.

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Energy prices themselves have been rising because of supply-and-demand conditions in their worldwide markets. OPEC does not have the power to force even relative price increases on the world by artificially restricting the supply of oil, *independently of the state of world demand*. If it tried to restrict output and raise the price of oil at a time of low demand, nonmember producers eager to increase their own market share would increase output and undercut OPEC's price; OPEC members themselves would also cheat. Only when demand is buoyant and there are enough sales at high prices to satisfy members and nonmembers alike does OPEC's ability to restrict supply become strong and durable enough to keep prices up. In the early and late 1970s and again now, that ability has been strong, and in each case it has stemmed from a booming world economy that has driven up the demand for oil. But what this implies for inflation in any particular country depends on how its monetary authorities behave.[4]

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3 If markets were textbook perfect and all prices adjusted instantaneously to shocks, even this exception would disappear. But in the real world, when some extraneous shock, such as an indirect tax increase, drives up the money price of some specific group of goods, even if the change is not accommodated by monetary policy, it takes time for the prices of other goods to decline to offset its effects on the overall price level. In the meantime, the overall price level will fluctuate. If the monetary authorities decide to accommodate this first-round effect on the price level (as the Bank of Canada did with the introduction of the GST), there will be a once-and-for-all increase in the price level, which will show up in quarterly observations on the year-over-year inflation rate as an increase followed by an offsetting fall four quarters later.

4 Parkin (1980) reached essentially the same conclusion in his paper about the inflationary consequences of the oil-price shocks of the 1970s. Parkin showed that the time path of domestic inflation that followed on from those oil price increases varied dramatically from country to country, and depended crucially on the extent to which domestic monetary policy was deployed to accommodate them.

In Canada over the past year, an ongoing increase in the *relative price* of energy has certainly been reflected in an increase in its *money price*, and the latter has not been offset by a slower rate of growth (or even a fall) in the money prices of other goods in the CPI. To say this, however, is merely to describe the data, not to explain their behavior. The overall increase in headline inflation in Canada has been caused not by the rising relative price of energy products but by Canadian monetary policy. Had this policy been a little tighter in 1998 and 1999, relative price movements would have been the same, but money prices of the overall bundle would have risen by less from late 1999 onward.

If this diagnosis, made with the benefit of hindsight, is correct, then abstracting from the recent behavior of energy prices so as to "look through" headline inflation to the core rate does not help us to see the long-run trend of inflation. Rather, it is preventing us from recognizing a change in that trend that began nearly a year ago. (See the appendix for a discussion of the relationships among headline inflation, headline inflation excluding food and energy, and core inflation since inflation targeting began.)

The Role of the Bank of Canada

Canada is too small a part of the world economy for local conditions to have any significant influence on worldwide energy markets. Bank of Canada policy does have domestic effects, however, and the rising Canadian dollar price of energy products should be viewed as simply one particularly visible component of a more general inflationary process. Canadian monetary policy has been too expansionary for comfort in the recent past, and continues to be so now, as the following considerations suggest.

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First, as a recent *C.D. Howe Institute Commentary* (Robson and Aba 2000) reminds us, narrow money growth is usually a reliable indicator of inflation to come when read intelligently in the light of information about institutional change in the financial sector, and it has been running well into double digits over the past year.

Second, the unemployment rate seems to have become stuck in a range a little under 7 percent recently. This suggests that the still-arthritic Canadian labor market has little, if any, give left in it, a situation that will only worsen if recently proposed changes to the employment insurance (EI) system become law (see Nakamura 2000).

Third, although output growth remains vigorous, even the most enthusiastic advocate of the "new economy" would find it difficult to defend the view that the current inflation-adjusted 4.4 percent annual growth rate of GDP is sustainable in the long run. Canada's economy may well be on the threshold of a sustained increase in the rate of productivity growth, but a temporary improvement here is a feature of the later stages of any cyclical expansion. Surely, the economy's recent performance reflects this latter force as well as any long-term improvement that may also be at work.

Fourth, over the past 18 months or so, there have been widespread expectations that the Canadian/US dollar exchange rate would appreciate.

Non-oil commodity prices, which are important determinants of the exchange rate, have risen since their 1997–98 slump, though not to the levels of the boomtime mid-1990s, and Canada's fiscal situation continues to improve. If it is hard to make the case that the Canadian dollar is seriously undervalued, it is nevertheless easy to see why so many analysts have been expecting it to show signs of moving to the 70-plus cents range.[5] Their disappointment can plausibly be attributed to a little too much ease in domestic monetary policy.

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Finally, whatever the outcome of the federal election, it is clear that Canadians will soon see substantial tax cuts, which will have an expansionary effect on aggregate demand that might require some monetary offset.

Conclusion

Over the past year, money growth has been strongly inflationary by any reasonable historical standard, and remains so. The unemployment rate has ceased to fall, and recently proposed changes to employment insurance would reintroduce an element of rigidity to the labor market. Output growth is unsustainably high. The exchange rate continues to disappoint widely held expectations of appreciation. Fiscal policy will soon become significantly more expansionary. And, to cap it all, headline inflation has been creeping up and is now pushing on the upper limits of its target range. The contrary view, that monetary policy remains on track, puts more weight on the subdued behaviour of core inflation than this concept can comfortably bear.

This is not to suggest that the Bank of Canada has been ignoring the evidence that has been building up over the past year. It made an effort in May to tighten monetary policy by increasing the overnight rate by 50 basis points, but it is beginning to look as if this increase was not enough. Given the long lags that separate policy actions from their ultimate effect on the inflation rate, the time is fast approaching for the Bank to tighten up policy a little more. Continuing to leave things alone for much longer increases the risk of having to tighten sharply in the spring in belated response to a persistent overshoot of the target range for inflation, and that is not an attractive prospect.

5 Contrary to widely held beliefs, there is no reason to think that the recent increase in world energy prices should itself have strengthened the Canadian dollar. Canada produces and exports energy products, but also uses them relatively intensively as inputs to its manufactured exports. These two factors work in opposite directions on the currency when energy prices rise. The empirical evidence suggests that it is the second of them that has been dominant for the past 30 years, and continues to be so now. For a recent account of empirical work that confirms this long-standing result, and references to earlier studies of the determinants of the exchange rate, see Murray (1999).

Appendix: Measuring Inflation — The Granger Causality Test

"Headline" inflation is the inflation measure the Bank of Canada targets, and is thus the one that ultimately concerns us the most. For operational purposes, it makes sense to monitor "core" inflation rather than headline inflation only as long as changes in core inflation today help explain changes in headline inflation in the future. One way to determine whether this is, in fact, the case is by applying what economists call the Granger causality test.

The test first examines whether a model containing past values of both headline and core inflation does a better job of predicting current *headline* inflation than a model containing past values of *headline* inflation alone. The test then examines whether a model containing past values of both headline and core inflation is better at predicting current *core* inflation than a model with past values of *core* inflation alone. If the models containing past values for both measures perform better in the two cases, the test is inconclusive. But if the only model that does better is the one that predicts headline inflation with past values of both indicators, then one can conclude that variations in core inflation "cause," according to the Granger test, variations in headline inflation.

We examined quarterly year-over-year growth rates of both headline inflation and core inflation from the first quarter of 1993 to the second quarter of 2000.[6] The results, displayed in the accompanying table, show that headline inflation causes core inflation and core inflation causes headline inflation. Such inconclusive results do not allow us to attribute causation here; they suggest that both indicators are responding to movements in some other variable. A larger sample, covering the period from 1987:Q1 to 2000:Q2 was also inconclusive.

The table also shows, however, that CPI inflation, excluding food and energy prices, does cause variations in headline inflation in the first sample, but not in the second, larger sample. Since changing the sample period changes the results of the test, no clear conclusion can be drawn.

Put into context, these results suggest that the persistently low and stable core inflation rates that have recently been observed should not make us any more or less confident that future inflation will remain stable and within target.

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6 Because we used 8 lags, the lagged values therefore cover the period from the first quarter of 1991 to the second quarter of 2000.

Granger Causality Test Results

	Number of Lags							
	1	2	3	4	5	6	7	8
	sample period: 1993:Q1–2000:Q2							
Core inflation causes headline inflation	no	no	no	yes**	yes**	yes*	no	no
Headline inflation causes core inflation	no	no	yes**	yes**	yes*	no	no	no
CPI inflation, excluding food and energy, causes headline inflation	no	no	no	no	no	yes*	no	yes*
Headline inflation causes CPI inflation, excluding food and energy	no	no	no	no	no	no	no	no

* Using 5 percent confidence level.

** Using 1 percent confidence level.

Note: Sample period refers to the dependent variable values.

Source: Statistics Canada, CANSIM database; and authors' calculations.

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